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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Akihiko Okano

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EXAMINER

MCPHERSON, JOHN A

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/576,247	Applicant(s) OKANO ET AL.	
	Examiner John A. McPherson	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/17/08</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This Office Action is responsive to the Amendment filed 2/1/08.
2. The Amendment filed 2/1/08 successfully overcomes the objection and rejections set forth in paragraphs 1-5 of the Office Action mailed 11/1/08. Accordingly, these rejections are withdrawn.

Claim Objections

3. Claim 6 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 6 is drawn to an embodiment of the present invention wherein an alkaline solution is used as the developing solution. However, claim 1 has been amended to include the limitations of claim 7, so as to require the presence of a particular developing solution comprising a nitrogen-containing basic organic solvent (i.e. a specific alkaline solution - note that claim 7 previously depended from claim 6). Therefore, claim 6 does not further limit claim 1.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 and 8-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0 734 866 [cited in the Information Disclosure Statement filed 4/18/06] (EP '866) in view of EP 1 380 423 [cited in the Information Disclosure Statement filed 4/18/06] (EP '423).

EP '866 discloses a process for the production of an ink jet head, comprising the steps of providing a substrate with an energy generating element thereon; forming a photosensitive layer comprising an ionizing radiation decomposable photosensitive resin containing a crosslinkable structure on the substrate; subjecting the photosensitive resin layer to crosslinking treatment; forming a coating resin layer on the crosslinked photosensitive resin layer; hardening the coating resin layer; irradiating the crosslinked photosensitive resin layer through the hardened coating resin layer; and eluting the crosslinked photosensitive resin layer. See the abstract. Exemplified decomposable photosensitive resins include a copolymer of methyl methacrylate and methacrylic acid with a copolymerization ration of 9:1 (see page 9, lines 14-20), and a copolymer of methyl methacrylate and methacrylic acid with a copolymerization ratio of 8/2 and weight average molecular weight of about 180,000 (see page 16, line 37 to page 17, line 3).

However, EP '866 discloses eluting the solubilized portion of the decomposable photosensitive resin by immersing in methylisobutyl ketone (e.g. see page 17, lines 1-2 and page 14, lines 21-25), not by utilizing the developing solution of the present invention. Additionally, with respect to claim 10, EP '866 does not disclose utilizing methyl isobutyl ketone and/or xylene as the solvent for coating the negative type photosensitive resin layer (i.e. the coating resin).

EP '423 discloses a method for producing a liquid discharge head comprising the step of developing to remove the irradiated area of a positive-working photosensitive layer to obtain a mold pattern, wherein it is taught that as a developing liquid for the positive-working photosensitive material there can be employed a solvent capable of dissolving an exposed area and not easily dissolving an unexposed area, for example methyl isobutyl ketone, however a developing liquid containing a glycol ether having 6 or more carbon atoms and miscible with water in an arbitrary ration, a nitrogen-containing basic organic solvent and water can be particularly advantageously employed. See paragraph [0034]. Furthermore, with respect to claim 10, EP '423 discloses coating a layer of liquid flow path structure material (i.e. the negative type photosensitive resin layer) by employing either xylene or methyl isobutyl ketone as a coating solvent. See paragraphs [0059] and [0078], respectively.

It would have been obvious to one skilled in the requisite art to utilize a developing liquid containing a glycol ether having 6 or more carbon atoms and miscible with water in an arbitrary ration, a nitrogen-containing basic organic solvent and water, as taught by EP '423, for eluting the solubilized portion if the decomposable

Art Unit: 1795

photosensitive resin in the process of EP '866 because it is taught that such as developing liquid is particularly advantageously employed, as compared to methyl isobutyl ketone, for removing the irradiated area of a positive-working photosensitive layer to obtain a mold pattern. Furthermore, it would have been obvious to one skilled in the requisite art to utilize either xylene or methyl isobutyl ketone for a coating solvent, as taught by EP '423, when forming the coating resin layer in the process of EP 866 because it is taught that xylene and methyl isobutyl ketone are each recognized in the art as solvents useful for coating the layer of liquid flow path structure material over the patterned decomposable photosensitive resin.

5. Claims 1-6 and 8-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2004-042396 [cited in the Information Disclosure Statement filed 4/18/06] (JP '396) in view of EP 1 380 423 [cited in the Information Disclosure Statement filed 4/18/06] (EP '423).

JP '396 discloses a process for fabricating a liquid ejection head comprising the steps of forming a positive photosensitive resin layer on a substrate; exposing the positive photosensitive resin layer to form a liquid channel pattern; coating a negative coating resin layer on the patterned positive photosensitive resin layer; curing the negative coating resin layer; irradiating the patterned positive photosensitive resin layer; and dissolving the patterned positive photosensitive resin layer to form a liquid channel, wherein the positive resin layer includes a methacrylic system copolymer of methacrylic ester and methacrylic acid. The copolymer has a molecular weight of 5,000-50,000,

Art Unit: 1795

with methacrylic ester as a principle component and methacrylic acid present in an amount of 2-30 wt.%. The Examiner notes that both disclosed ranges include values which meet the molecular weight and weight% limitations of the presently claimed invention. See the abstracts; paragraphs [0016] of the computer-generated translation; and Figures 5-12. Furthermore, with respect to claim 10, the negative coating resin layer is formed by coating the patterned positive photosensitive resin layer with a material comprising an epoxy resin dissolved in xylene. See paragraphs [0059] and [0060] of the computer-generated translation.

However, JP '396 teaches using methyl isobutyl ketone as the developer for dissolving the patterned positive photosensitive resin layer (see paragraph [0033] of the computer-generated translation), not the developing solution of the present invention.

EP '423 discloses a method for producing a liquid discharge head comprising the step of developing to remove the irradiated area of a positive-working photosensitive layer to obtain a mold pattern, wherein it is taught that as a developing liquid for the positive-working photosensitive material there can be employed a solvent capable of dissolving an exposed area and not easily dissolving an unexposed area, for example methyl isobutyl ketone, however a developing liquid containing a glycol ether having 6 or more carbon atoms and miscible with water in an arbitrary ration, a nitrogen-containing basic organic solvent and water can be particularly advantageously employed. See paragraph [0034].

It would have been obvious to one skilled in the requisite art to utilize a developing liquid containing a glycol ether having 6 or more carbon atoms and miscible

Art Unit: 1795

with water in an arbitrary ration, a nitrogen-containing basic organic solvent and water, as taught by EP '423, for eluting the solubilized portion if the decomposable photosensitive resin in the process of EP '866 because it is taught that such as developing liquid is particularly advantageously employed, as compared to methyl isobutyl ketone, for removing the irradiated area of a positive-working photosensitive layer to obtain a mold pattern.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 12 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over EP 1 380 423 [cited in the Information Disclosure Statement filed 4/18/06] (EP '423). EP '423 discloses a liquid discharge head produced by a method comprising the steps of forming a positive-working photosensitive material on a substrate; heating the positive-working photosensitive material, thereby forming a crosslinked positive-working photosensitive

Art Unit: 1795

material layer; irradiating the crosslinked positive-working photosensitive layer with radiation of a first wavelength; developing to remove the irradiated area of the crosslinked positive-working photosensitive layer to obtain a mold pattern; forming a covering layer of a negative-working photosensitive layer on the mold pattern; irradiating the covering layer with radiation of a second wavelength to harden the covering layer; and removing the mold pattern by dissolution, wherein the positive-working photosensitive material comprises a ternary copolymer containing methyl methacrylate as a main component and methacrylic acid as a thermally crosslinkable factor. See the abstract; paragraphs [0011]-[0013] and Figures 5-11.

Although the liquid discharge head of EP '423 is produced by a different method than the ink jet head of the present invention, specifically the two methods employ different positive photosensitive materials to form the mold path, the liquid discharge head of the prior art appears to be substantially identical to the ink jet head of the present invention because both comprise a substrate and a covering layer comprising a hardened negative-working photosensitive layer, wherein the covering layer encloses a flow path produced by dissolving a mold pattern (i.e. the different positive photosensitive mold path materials are removed during processing).

Even though product-by-process claims are limited by and defined by the process, determination of the product is based upon the product itself. The patentability of a product does not depend upon its method of production. If the product in the product by process-by-process claims is the same as or obvious from a product of the

Art Unit: 1795

prior art, the claim is unpatentable even though the prior art product was made by a different process. See MPEP 2113.

Response to Arguments

7. Applicant's arguments with respect to claims 1-6 and 8-15 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Art Unit: 1795

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John A. McPherson whose telephone number is (571) 272-1386. The examiner can normally be reached on Monday through Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John A. McPherson/
Primary Examiner, Art Unit 1795

JAM
5/21/08